

REMARKS**Claim Amendments**

Claims 16, 42 and 43 are amended to delete the recitation of the phrase “interpenetrating network”.

Claim 43 is further amended to recite that liquid used in step (a) comprises vinyl-containing phosphonic acid in the amount of at least 20% by weight, as described on page 29, lines 14-17 of the instant application.

Interview Summary

A telephone interview took place on May 12, 2009 between Examiner Helen Pezzuto and Applicants’ representative Alexander Akhiezer. The interview was initiated by Applicants.

The parties discussed the reference of Formato, of record, and the differences between the subject matter defined by the pending claims and the subject matter described by Formato. Applicants proposed to amend the pending claims to delete the recitation of the phrase “interpenetrating network”.

Pursuant to M.P.E.P. §713, the Applicant hereby makes the substance of interview of record.

Rejection of Claim 43 Under 35 U.S.C. §112

Claim 43 is rejected under 35 U.S.C. §112, first paragraph as being not enabled. The Examiner objected to the phrase “in the amount sufficient to”.

Without acquiescing to the Examiner’s argument, Applicants amended Claim 43 to recite that liquid used in step (a) comprises vinyl-containing phosphonic acid in the amount of at least 20% by weight. Applicants believe that this amendment overcomes the Examiner’s rejection.

Reconsideration and withdrawal of the rejection are respectfully requested.

Rejection of Claims 16, 18-19, 21, 24-26, 28-29, 36 and 40-43 under 35 U.S.C. §103(a) over U.S. 6,248,469 ("Formato")

Office Action

The Examiner maintained the rejection of Claims 16, 18-19, 21, 24-26, 28-29, 36 and 40-43 under 35 U.S.C. §103(a) over Formato. In response to Applicants' previously presented arguments, the Examiner stated that Formato expressly teaches that the membrane disclosed therein comprises an interpenetrating network (Formato, column 17, lines 41-43).

Applicants disagree with the Examiner and maintain that the membranes of Formato do *not* include an interpenetrating network of polymers. However, in the interest of expediting the prosecution of the present application, Applicants amended independent Claims 16, 42 and 43 to delete the recitation of the phrase "interpenetrating network".

Examination of a Product-by-Process Claim

Applicants submit that Claims 16, 42 and 43 are patentable in view of Formato. As Applicants previously noted, M.P.E.P. §2113 states regarding product-by-process claims:

The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art [...]
(*Emphasis added.*)

In other words, if the material formed as a result of performing the steps recited in Claims 16, 42 and 43 is inevitably different from that of Formato, then the material of Claims 16, 42 and 43 is patentably distinct. These inevitable material differences are not required to be recited in the claims.

Applicants also previously directed the Examiner's attention to the decision of *In re Garnero*, 412 F.2d 276, 162 USPQ 221 (CCPA 1969), which is quoted in M.P.E.P. §2113. In *In re Garnero*, the court addressed the issue of patentability of a product-by-process claim in view of the art applied under 35 U.S.C. §103(a):

On appeal the solicitor's position appears to be that they only distinction between appellant's product and the products of the prior art is the process by which appellant's product is made [...] The solicitor is in effect reading claim

1 [...] as a product claim containing a process limitation [...] (412 F.2d 276 at 278).

The court rejected this approach:

The trouble with the solicitor's approach is that it necessarily assumes that claim 1 should be construed as a product claim containing a process, rather than structural, limitation. However, it seems to us that the recitation of the particles as “interbonded one to another by interfusion [...]” [...] is [...] capable of being construed as a structural limitation [...] (412 F.2d 276 at 279).

The court also gave clear guidelines for examination of a product-by-process claim:

The correct inquiry [...] is whether the product defined by claim 1 is patentably distinguishable over the [cited references] in view of the structural limitation [...] (*Ibid.*) (*Emphasis added.*)

Similar to *In re Garnero*, the product formed as a result of the steps recited in the instant claims is structurally different from the product described in the cited reference, as explained by Applicants. The Examiner, therefore, should inquire whether the structural differences between the product defined by the instant claims patentably distinguish this product from the cited references.

Applicants' Response

As Applicants argued in previous responses, the product defined by the instant claims is patentably distinct from the product of Formato.

The Examiner directed Applicants to the teachings of Formato as described in column 17, lines 41-43. Applicants note that the referenced portion of Formato describes a “fourth preferred embodiment” (column 17, lines 22-27). It is further noted that Formato teaches that the porous substrate polymer used in the fourth preferred embodiment is produced as described in a “third preferred embodiment” (Formato, column 17, lines 30-32). The third preferred embodiment, in turn, is described in Formato, column 16, line 66 through column 17, line 21. In particular, Formato states (column 17, lines 2-8):

A variety of methods exist for the fabrication of porous polymer films, most centered around dissolving a polymer within a water miscible solvent. A

freshly cast film is then soaked in water causing the polymer to precipitate from solution. This phase separation of the solvent and the polymer causes the formation of the porous network as the solvent is leached into the water.

In other words, a portion of an internal volume of a slab (film) of a polymer is washed away, leaving voids (pores) in the bulk of the polymer¹. According to the fourth preferred embodiments of Formato, the voids within the polymer film are filled with monomer, which is then polymerized (column 17, lines 36-38).

In contrast, independent Claims 16, 42 and 43 define a product obtained by (a) expanding a polymer film (the *entire* polymer film rather than only a region of the film defined by voids in the polymer material) with a liquid that contains vinyl-containing phosphonic acid monomers and vinyl-containing sulphonic acid monomers and (b) polymerizing the monomers in the liquid. Clearly, because the *entire bulk* of the polymer film recited in steps (a) of Claims 16, 42 and 43 are imbibed with the monomer solution, the *in situ* polymerization that takes place in steps (b) of Claims 16, 42 and 43 will result in the *in situ* formed polymer(s) permeating the entirety of polymer film, rather than being limited to the void regions, as in Formato's material. Therefore, Formato's membranes are structurally different from the membranes defined by Claims 16, 42 and 43.

Because Formato's membranes are produced by filling the pores (voids) in the substrate polymer with the second type of material, Formato neither teaches nor suggests a membrane in which the second type of material is permeating the entirety of the first polymer material, as is the case with the membranes defined by the pending claims. Furthermore, as Applicants argued in previous responses, Applicants' membranes possess unexpected advantages not disclosed or suggested by any of the cited references, including Formato. Specifically, Applicants' membranes show conductivity at very high temperatures, above the boiling point of water, and

¹ Applicants direct Examiner's attention to column 12, lines 28-47 of Formato, where the general method of preparation of his membranes is described. Specifically, the substrate polymer is formed into film (col. 12, lines 33-36), and then immersed in water, which leaches out solvent and coagulates polymer (col. 12, lines 36-39). This process forms voids (col. 12, line 40). Ion-conducting material is then introduced into these voids either by solvent-exchange process (column 12, lines 41-42), or by infiltrating a dry membrane (column 12, line 43). This description is consistent with FIG. 1, which is a schematic illustration of the process by which Formato's membranes are prepared. (Express description of FIG. 1 is not found in Formato.) It is clear from panel A of FIG. 1 that pores (i.e. the regions in which "voids" were formed by solvent leaching) are separate and distinct from the polymer (i.e. regions in which no "voids" were formed). Turning now to panel B of FIG. 1, it is clear that whether solvent-exchange or infiltration variant of the process of Formato is used, the ion-conducting material is within the pore, and is not within the polymer regions.

thus can function without moistening (see page 35, lines 22-26 of the English translation of the instant Application).

In view of the foregoing, base Claims 16, 42 and 43, as well as the claims depending thereon, are patentable over Formato.

Reconsideration and withdrawal of the rejection are respectfully requested.

Double-Patenting

Claims 16, 18-19, 21, 24-26, 28-29, 36 and 40-43 are being provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over Claims 20-26, 28-31, and 41-50 of co-pending U.S. App. No. 10/506,622.

A Terminal Disclaimer under 37 C.F.R. § 1.321(c) is being filed concurrently herewith, in which the owner of a 100 percent interest in the instant application, BASF FUEL CELL GmbH, disclaims the terminal part of the statutory term of any patent that would grant on the instant application which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. §§154 to 156 and 173, and as would be shortened by any terminal disclaimer, of any patent that would grant on U.S. App. No. 10/506,622.

The rejection of pending Claims 16, 18-19, 21, 24-26, 28-29, 36 and 40-43 is moot with the submission of the Terminal Disclaimer. Withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 

Alexander Akhiezer

Registration No. 54,617

Telephone: (978) 341-0036

Facsimile: (978) 341-0136

Concord, MA 01742-9133

Date: 6/11/09